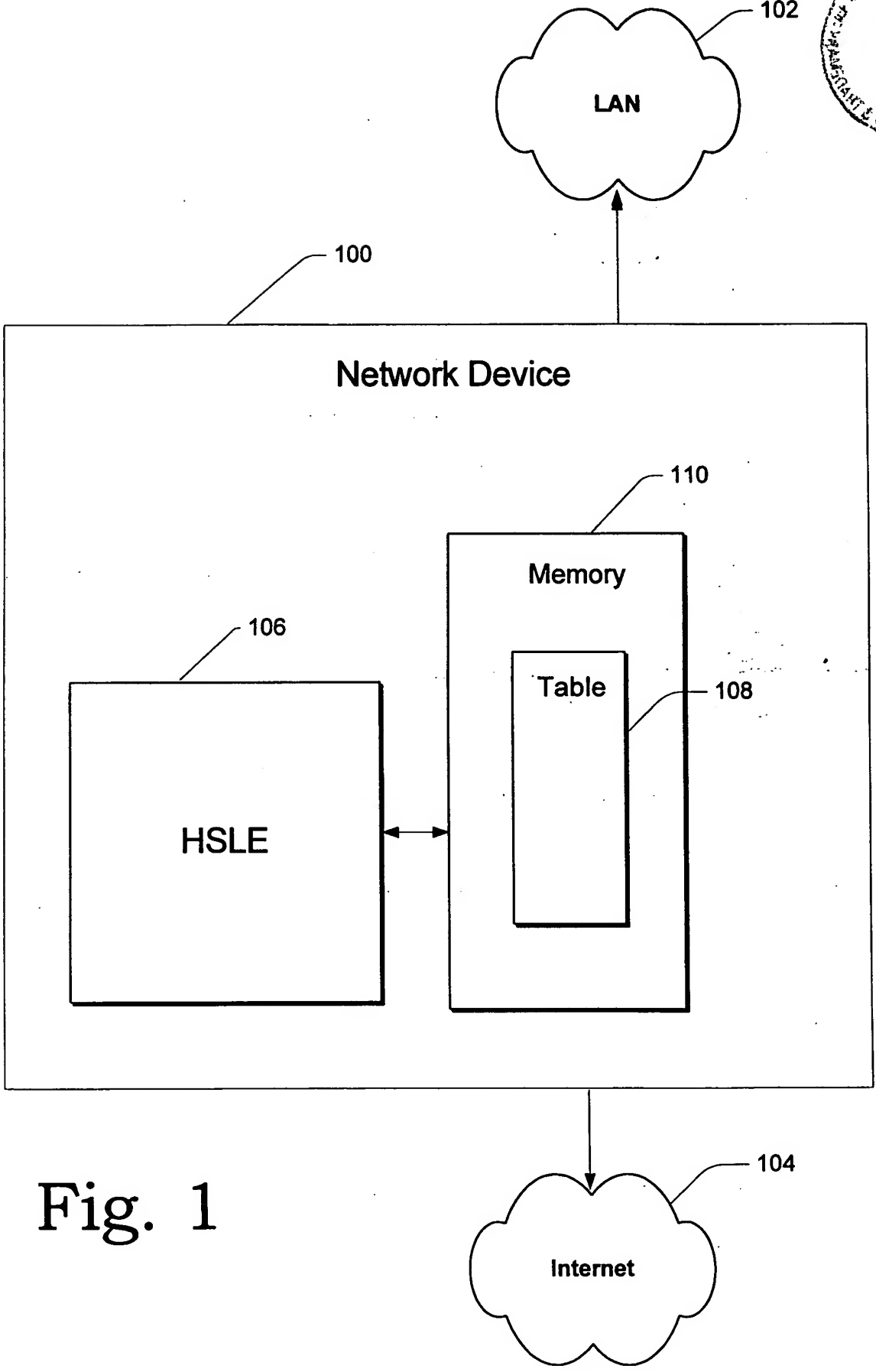

102
LAN
100
Network Device
110
Memory
106
Table
108
HSLE
104
Internet

Fig. 1

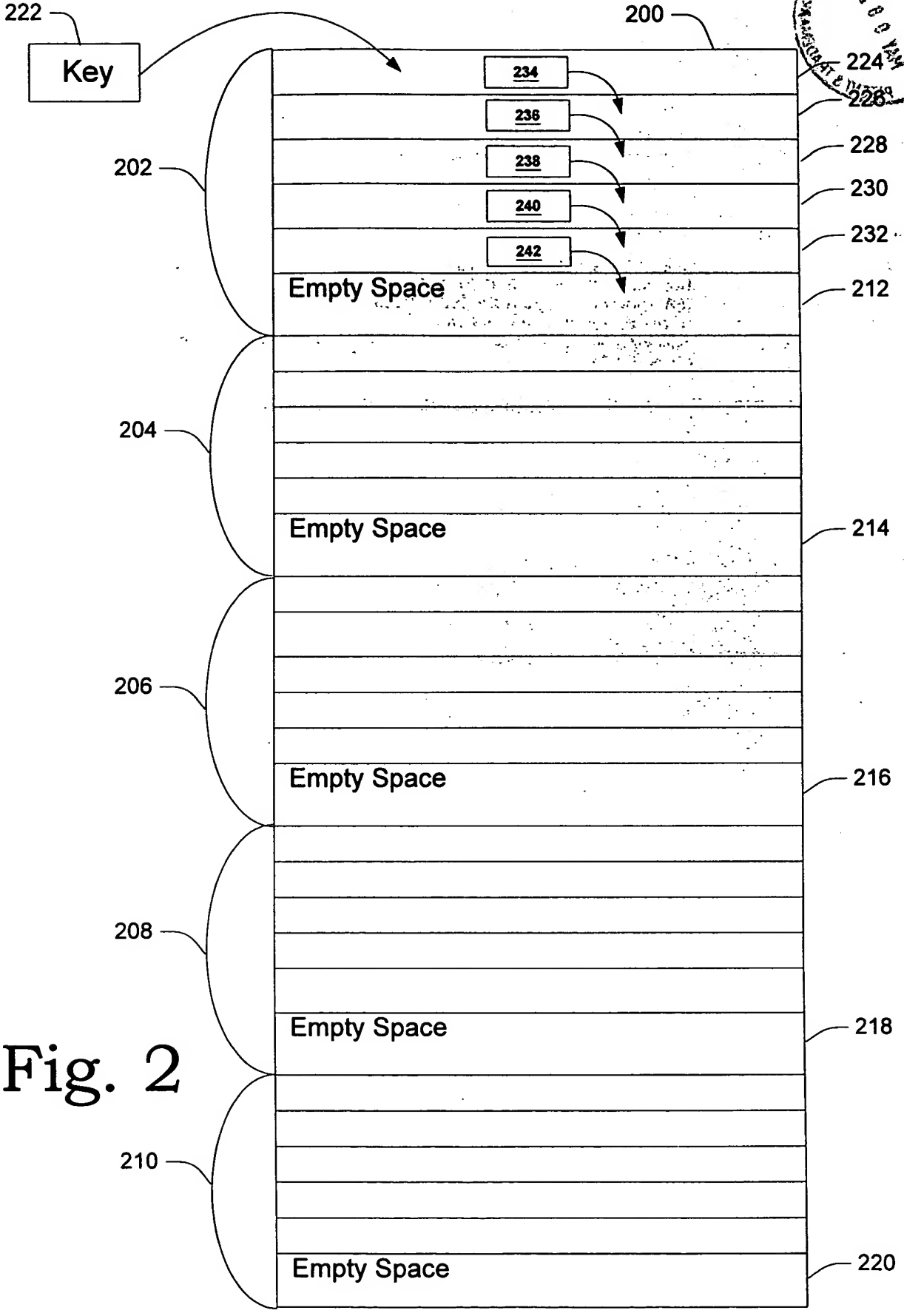

222
Key
200
234
236
238
240
242
224
226
228
230
232
202
Empty Space
212
204
Empty Space
214
206
Empty Space
216
208
Empty Space
218
210
Empty Space
220

Fig. 2

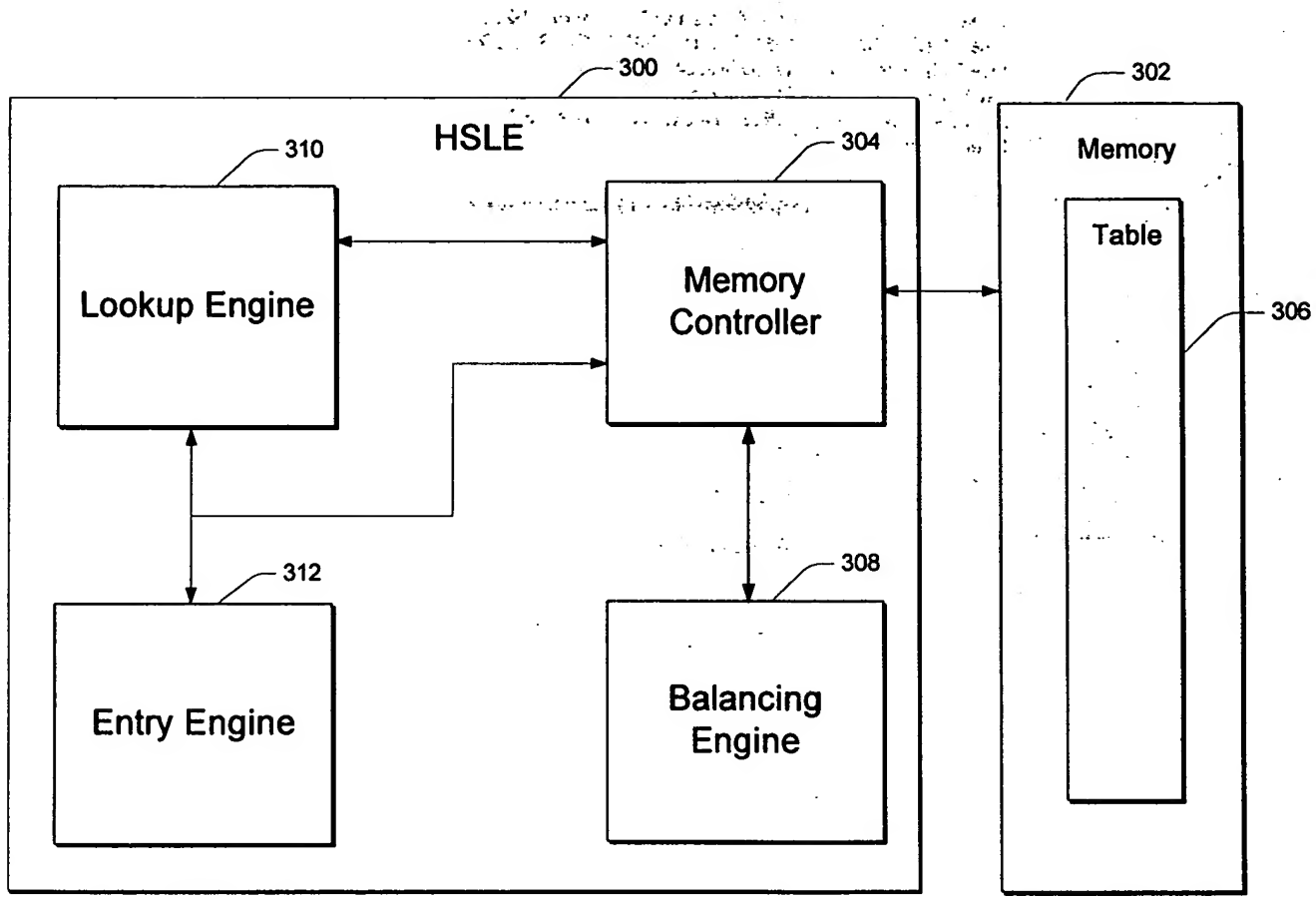

300
HSLE
310
Lookup Engine
304
Memory Controller
312
Entry Engine
308
Balancing Engine
302
Memory
Table
306

Fig. 3

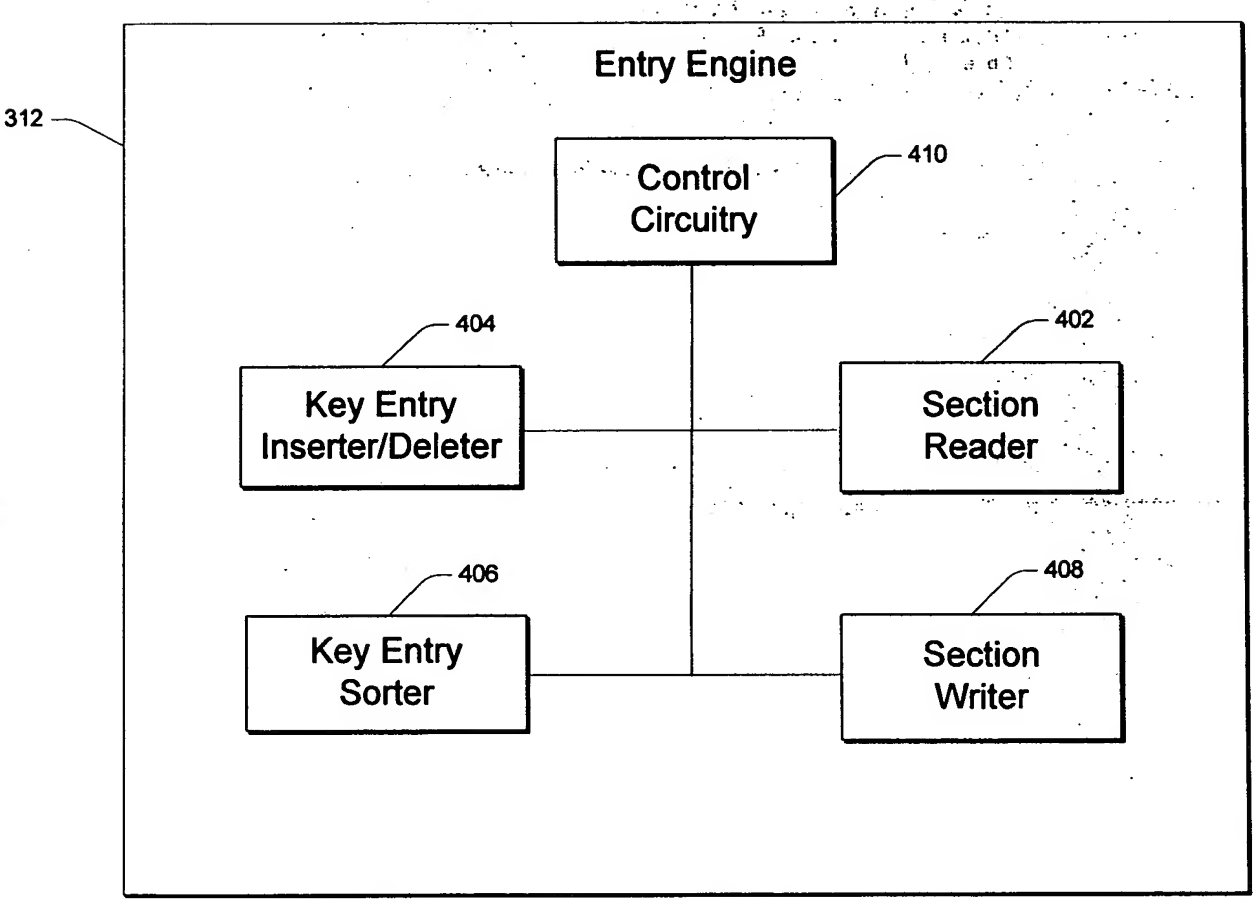

Entry Engine
312
Control Circuitry
410
Key Entry Inserter/Deleter
404
Section Reader
402
Key Entry Sorter
406
Section Writer
408

Fig. 4

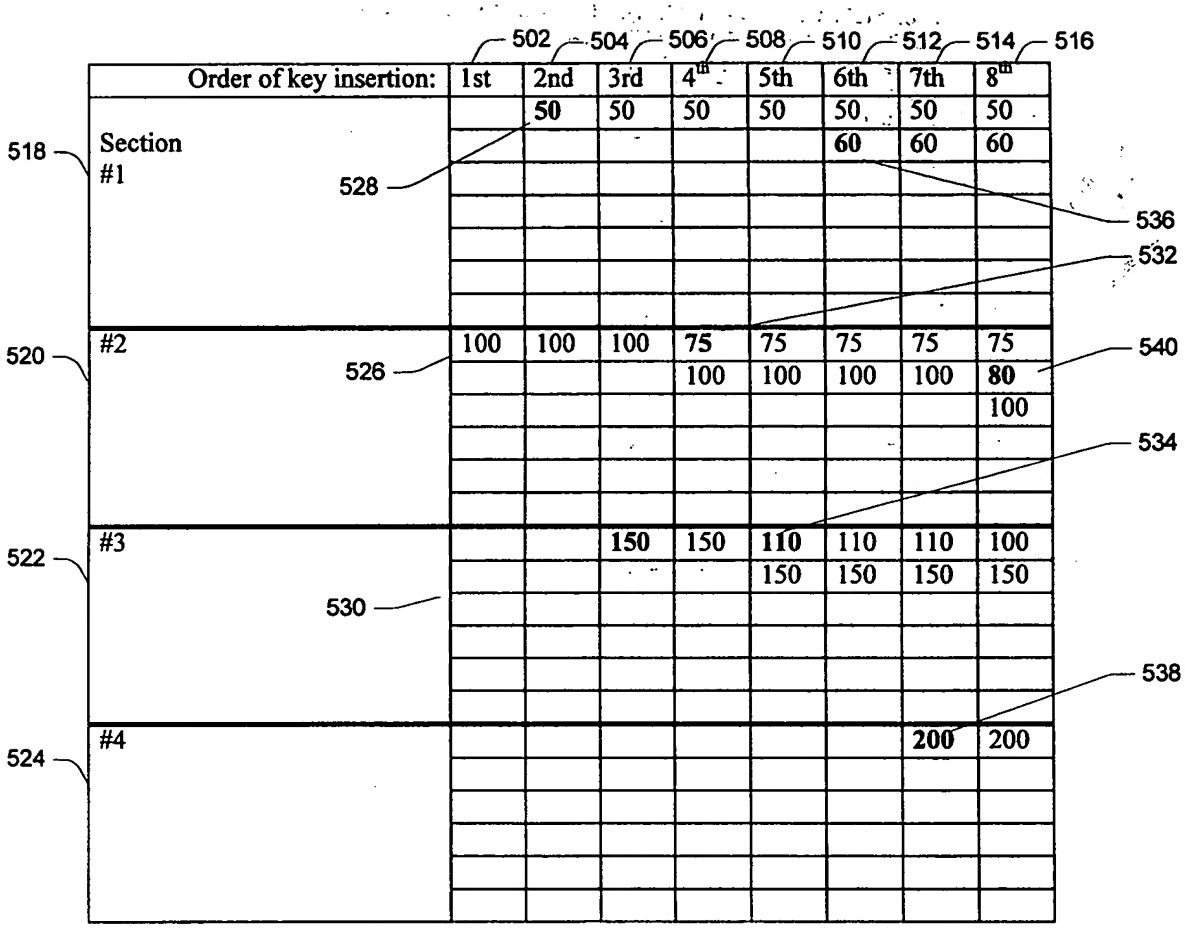

502
504
506
508
510
512
514
516
Order of key insertion:
1st
2nd
3rd
4th
5th
6th
7th
8th
Section #1
#2
#3
#4
518
520
522
524
528
526
530
536
532
540
534
538
50
50
50
50
50
60
60
60
100
100
100
75
75
75
75
75
100
100
100
100
80
100
150
150
110
110
110
100
150
150
150
150
200
200

Fig. 5

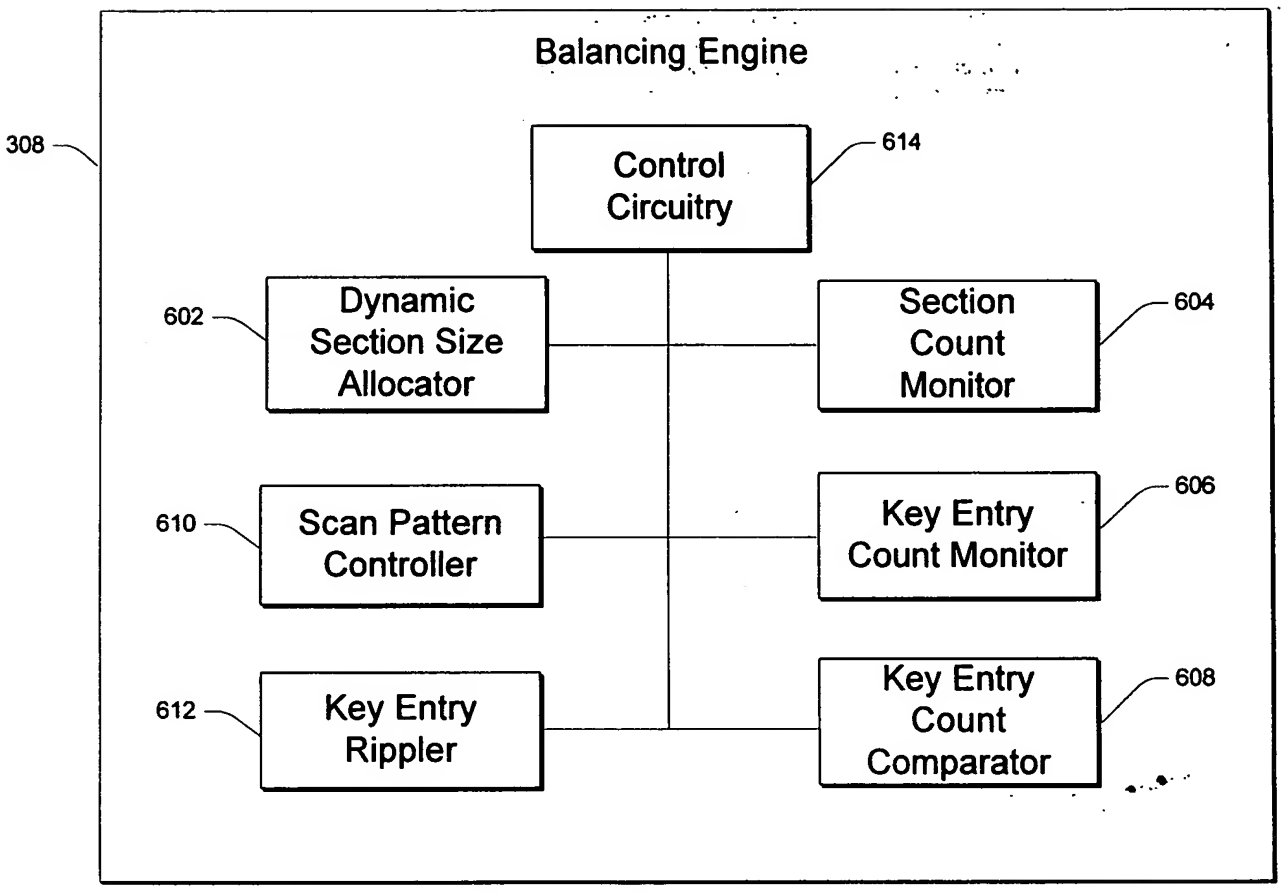
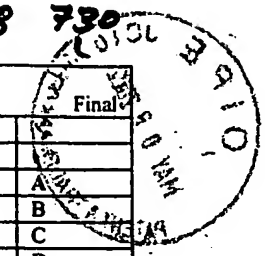
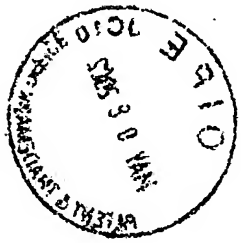

Balancing Engine
308
Control Circuitry
614
Dynamic Section Size Allocator
602
Section Count Monitor
604
Scan Pattern Controller
610
Key Entry Count Monitor
606
Key Entry Rippler
612
Key Entry Count Comparator
608

Fig. 6



Sec. No.	Loc. No.	Operations of moving entries from section to section 1st (718)	2nd (720)	3rd (722)	4th (724)	5th (726)	6th (728)	Final (730)
1	1							
	2							
	3						A 732	A
702	4						B 734	B
	5				A 732	A	C 735	C
	6				B 734	B	D 737	D
	7		A 732	A	C 735	C	E 746	E
	8		B 734	B	D 737	D	F 756	F
2	1	A						
	2	B						
	3	C 735	C	C	I 742	I	I	I
704	4	D	D	D	J 744	J	J	J
	5	E	E	E	E 746	E	K 745	K
	6	F	F	F	F	F	L 747	L
	7	G	G	G	G	G	G 758	G
	8	H	H	H	H	H	H	H
3	1	I	I	I				
	2	J	J	J				
	3	K	K	K 745	K 745	K	Q 752	Q
706	4	L	L	L	L	L	R 754	R
	5	M	M	M	M	M	M	M
	6	N	N	N	N	N	N	N
	7	O	O	O	O	O	O	O
	8	P	P	P	P	P	P	P
4	1	Q	Q	Q	Q	Q		
	2	R	R	R	R	R		
	3	S	S	S	S	S	S	S
708	4	T	T	T	T	T	T	T
	5	U	U	U	U	U	U	U
	6	V	V	V	V	V	V	V
	7	W	W	W	W	W	W	W
	8	X	X	X	X	X	X	X
5	1	Y	Y	Y	Y	Y	Y	Y
	2	Z	Z	Z	Z	Z	Z	Z
	3	AA	AA	AA	AA	AA	AA	AA
710	4	BB	BB	BB	BB	BB	BB	BB
	5	CC	CC	CC	CC	CC	CC	CC
	6	DD	DD	DD	DD	DD	DD	DD
	7	EE	EE	EE	EE	EE	EE	
	8	FF	FF	FF	FF	FF	FF	
6	1	GG	GG	GG	GG	GG	GG	GG
	2	HH	HH	HH	HH	HH	HH	HH
	3	II	II	II	II	II	II	II
712	4	JJ	JJ	JJ	JJ	JJ	JJ	JJ
	5	KK	KK	KK	KK	KK	KK	EE 760
	6	LL	LL	LL	LL	LL	LL	FF 762
	7	MM	MM	MM	MM 748			
	8	NN	NN	NN	NN			
7	1	OO	OO 740	OO	OO	OO	OO	OO
	2	PP	PP	PP	PP	PP	PP	PP
	3	QQ	QQ	QQ	QQ	QQ	QQ	KK 764
714	4	RR	RR	RR	RR	RR	RR	LL 766
	5	SS	SS	SS	SS	MM 748	MM	MM
	6	TT	TT	TT	TT	NN 750	NN	NN
	7	UU	UU					
	8	VV	VV					
8	1			UU 736	UU	SS 751	SS	QQ 768
	2			VV 738	VV	TT 753	TT	RR 770
	3					UU 736	UU	SS 751
716	4					VV 738	VV	TT 753
	5							UU 736
	6							VV 738
	7							
	8							

FIG. 7



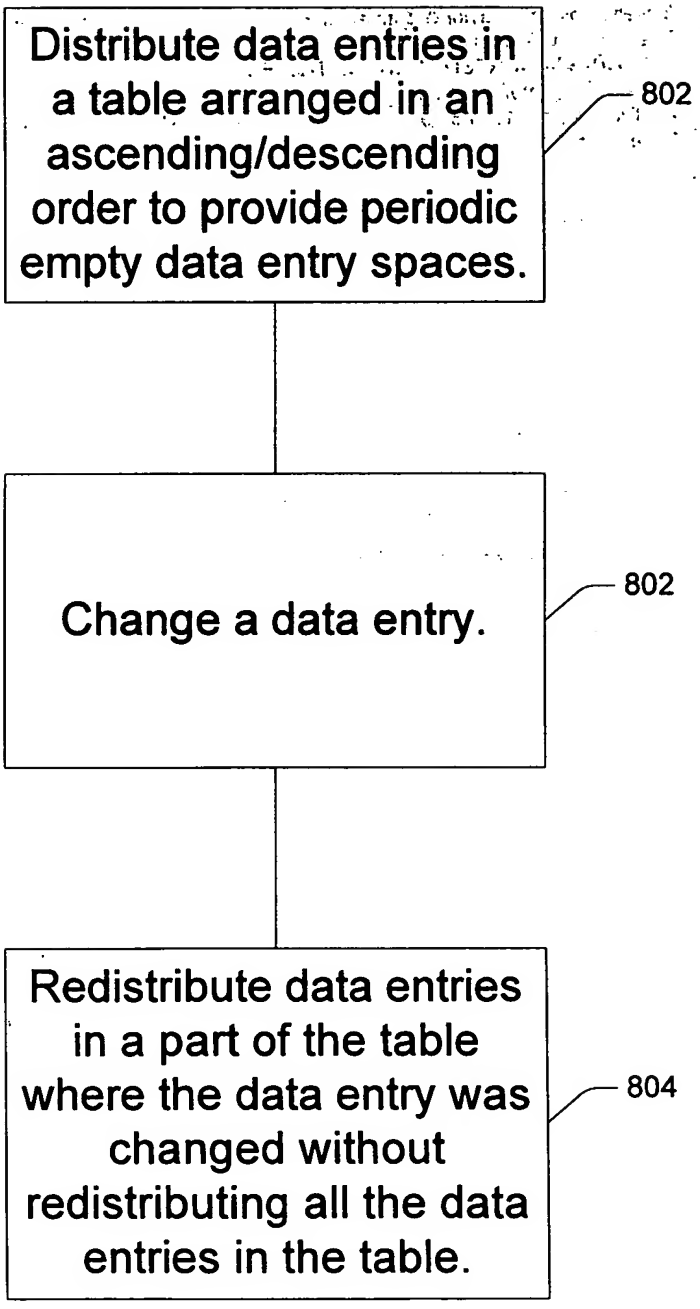

Distribute data entries in a table arranged in an ascending/descending order to provide periodic empty data entry spaces.
802
Change a data entry.
802
Redistribute data entries in a part of the table where the data entry was changed without redistributing all the data entries in the table.
804

Fig. 8

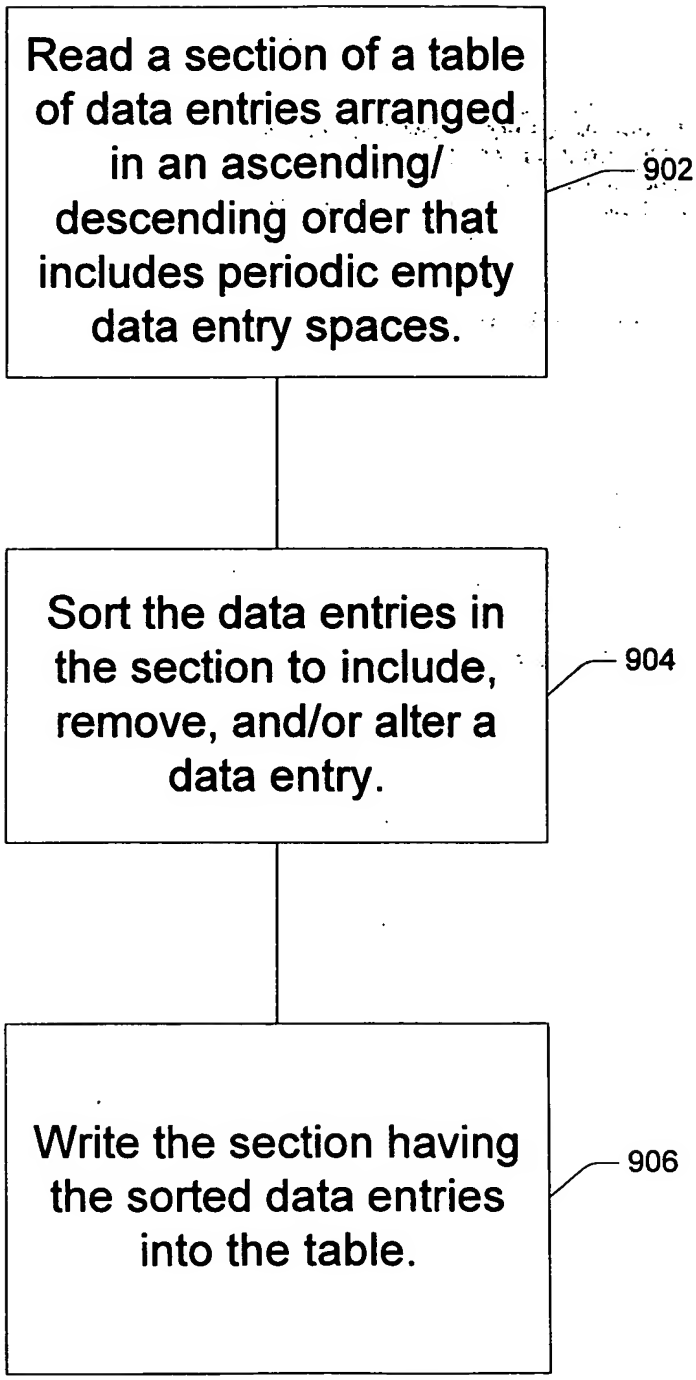

Read a section of a table of data entries arranged in an ascending/ descending order that includes periodic empty data entry spaces.
902
Sort the data entries in the section to include, remove, and/or alter a data entry.
904
Write the section having the sorted data entries into the table.
906

Fig. 9

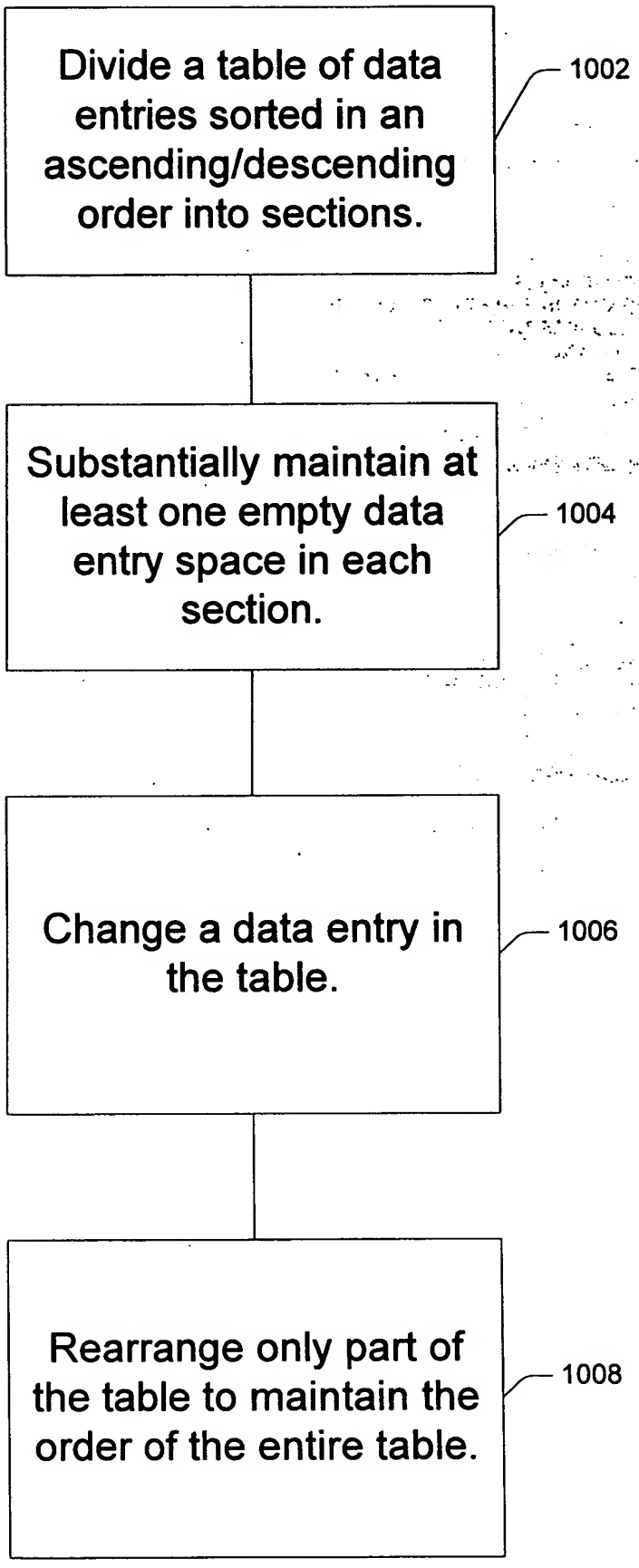

Divide a table of data entries sorted in an ascending/descending order into sections.
1002
Substantially maintain at least one empty data entry space in each section.
1004
Change a data entry in the table.
1006
Rearrange only part of the table to maintain the order of the entire table.
1008

Fig. 10

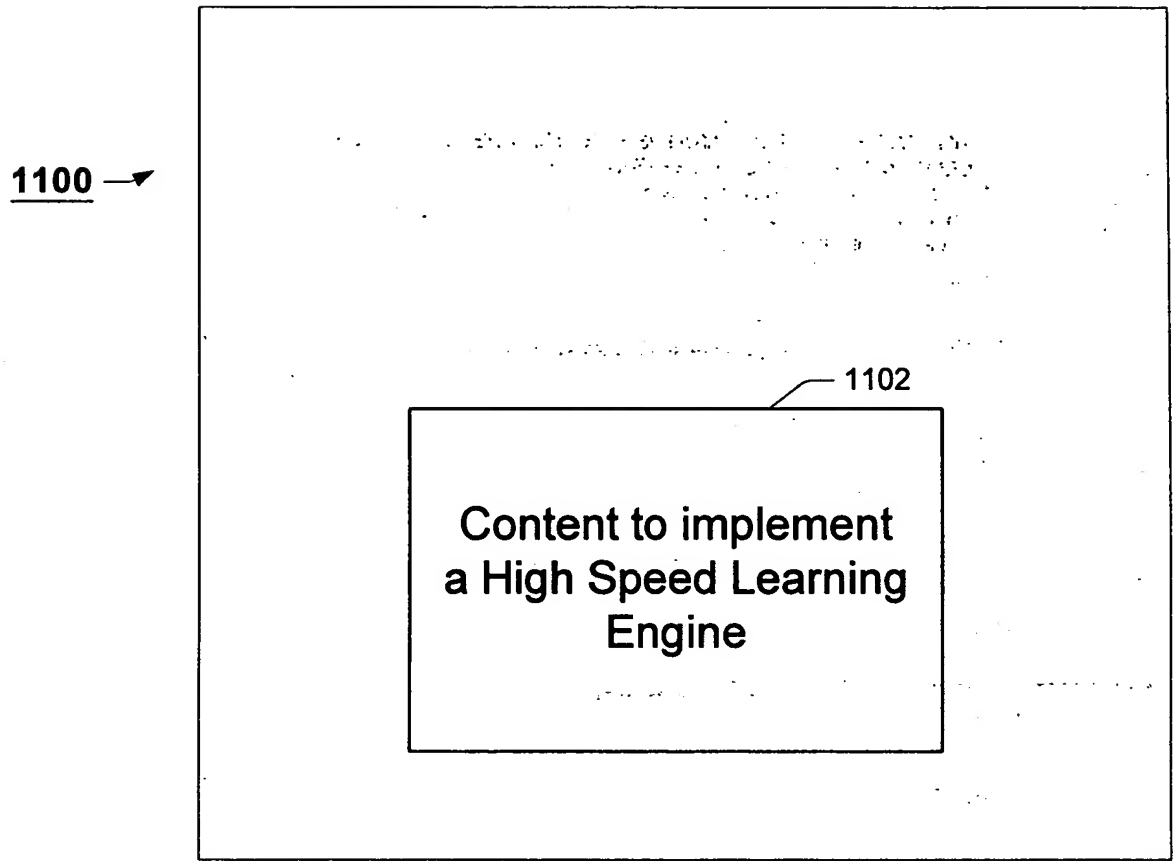

1100
1102
Content to implement a High Speed Learning Engine

Fig. 11